

Significant events reported by the Event Based Surveillance London 2012 Olympic and Paralympic Games

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Introduction

Event Based Surveillance (EBS) was an integral part of the HPA surveillance strategy for the Games. This report aims to provide summary level data on the events identified through the system and the source of the information. This report does not include an evaluation of EBS, which will be reported separately, or a narrative on individual reported events.

Summary

Between 02 July and 12 September 2012, 332 events of interest related to infectious agents were reported to Event Based Surveillance (EBS). Of these, 147 (44.3%) were new events and 185 (55.7%) were updates. London reported the most events of interest during the Olympic surveillance activities. The median number of updates per event was two.

The largest numbers of events were reported to EBS during and immediately after the Olympic Games (27 Jul to 12 Aug). An increased number of events were also reported at the beginning of the surveillance activities and at the end of the Paralympic Games (29 Aug to 07 Sep). Fewer events were reported at weekends and bank holidays.

The most common events reported related to foodborne disease/pathogens, followed by events related to vaccine preventable diseases (VPD).

Regional Operation Cells (ROCs) reported 252 events (79 new) to the EBS team, including five events not identified by the EBS team through the HP Dashboard (DB). The vast majority of the events of interest reported were present on the DB (327/332 events) although five events (three new) were not on DB. For 77 events (61 new), a DB alert was sent to the EBS inbox. There were 41 events (25 new) reported both by ROCs and sent as an alert by DB on the same day.

EBS staff risk assessed 332 events of interest reported by ROCs and identified on DB, and subsequently included 147 significant events (61 new) in the EBS SitRep to the HPA

Olympic Coordination Centre (OCC). About a third of the new significant events reported in the EBS SitRep (20/61) were then reported in the OCC daily SitRep.

Overall, the OCC included 67 events (21 new) in their daily SitRep under the space related to "Outbreak and incidents". Of these 67, 58 events (20 new) had been reported in the EBS SitRep.

Definitions

Significant events: Defined by the Event Based Surveillance (EBS) team as any event in England related to an infectious agent affecting an individual or a group of individuals which could have put the health of those participating, visiting or working at the Olympics at significant risk; or which was likely to be/had been the subject of media scrutiny which would harm the perception of the games; or which may have resulted in widespread public concern that needed to be addressed.

Events of interest: any event reported to EBS through a Regional Operation Cell (ROC) report or identified in HPZone Dashboard (DB) by the EBS team.

ROC reports: daily reports from HPA regions to EBS about events of interest in their area, through an electronic regional proforma. ROC events of interest were classified as "new events" when the event was reported for the first time, and "update events" when the event was an update.

DB events: events of interest identified through DB screening by EBS staff.

DB alerts: events entered in HPZone with "Olympic" as principal contextual setting. These events were immediately notified through an alert-email to the EBS inbox. DB alerts were classified as either "new alerts" or "update alerts".

EBS situation report (SitRep): EBS daily report on EBS significant events to the HPA Olympic Coordination Centre (OCC). The EBS SitRep was the final outcome of the processes of filtering and risk assessing all EBS events.

OCC SitRep: OCC daily public health report to the Department of Health and London Organising Committee of the Olympic Games (LOCOG). After filtering, OCC included EBS events in the section "outbreak and incidents" of their report.

Summary of the Event Based Surveillance system

EBS activities were conducted on a daily basis for 69 days between 02 July 2012 and 12 September 2012, apart from 07 to 08 July and 18 to 19 August when national Olympic surveillance activities were on an exception report basis only. EBS was based in HPA Victoria and was staffed by a team that included a daily duty regional epidemiologist and a scientist or a public health trainee.

The EBS protocol describes in detail the definitions, timelines, process, roles and responsibilities.



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In summary: each day, HPU reported events of interest to their ROC, which then subsequently reported to EBS. EBS staff also screened the DB for significant events. EBS combined intelligence from both ROC reports and DB screening to identify significant events that were then reported in a daily EBS SitRep to the OCC. The OCC issued a daily public health SitRep to the Department of Health and to LOCOG. At each level information was filtered and risk assessed.

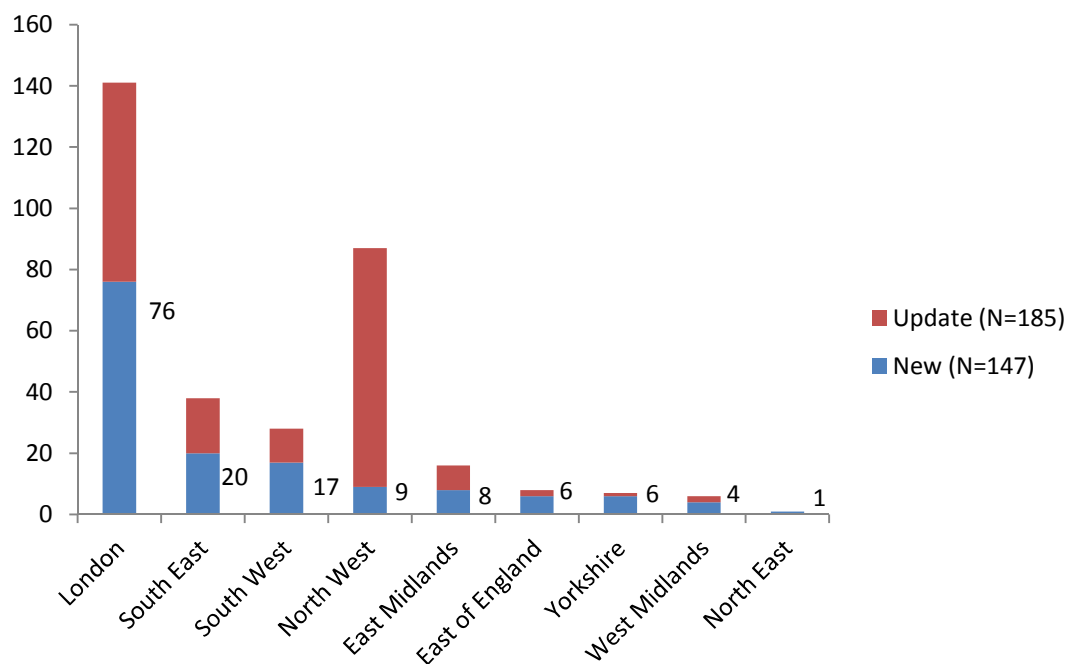
Descriptive analysis of EBS events

During the EBS period, 343 events of interest were reported to the EBS team, of which 11 were discarded as they related to non-infectious hazards. Of the remaining 332 events of interest, 147 (44.3%) were new events and 185 (55.7%) were updates to events previously reported. All HPA regions had at least one event reported to EBS.

Place

London was the region where most events were reported during EBS (Figure 1). The median number of updates per event was two, with the maximum being the 64 updates received for a measles outbreak in the North West region.

Figure 1: EBS events by HPA region of report and by new or update reports, 02/07 - 12/09 2012



Time

The largest numbers of events per day were reported to EBS in the period during and immediately after the Olympic Games (27 Jul to 12 Aug) (Figures 2 and 3). There was also an increase in the number of reports at the beginning of EBS and at the end of the Paralympic Games (29 Aug to 07 Sep). Most of the troughs in reporting occurred during weekends and bank holidays. Only 12.2% of new reports were reported at weekends and bank holidays (which accounted for 24.6% of the EBS days).

Figure 2: EBS events by day of report, 02/07 - 12/09 2012

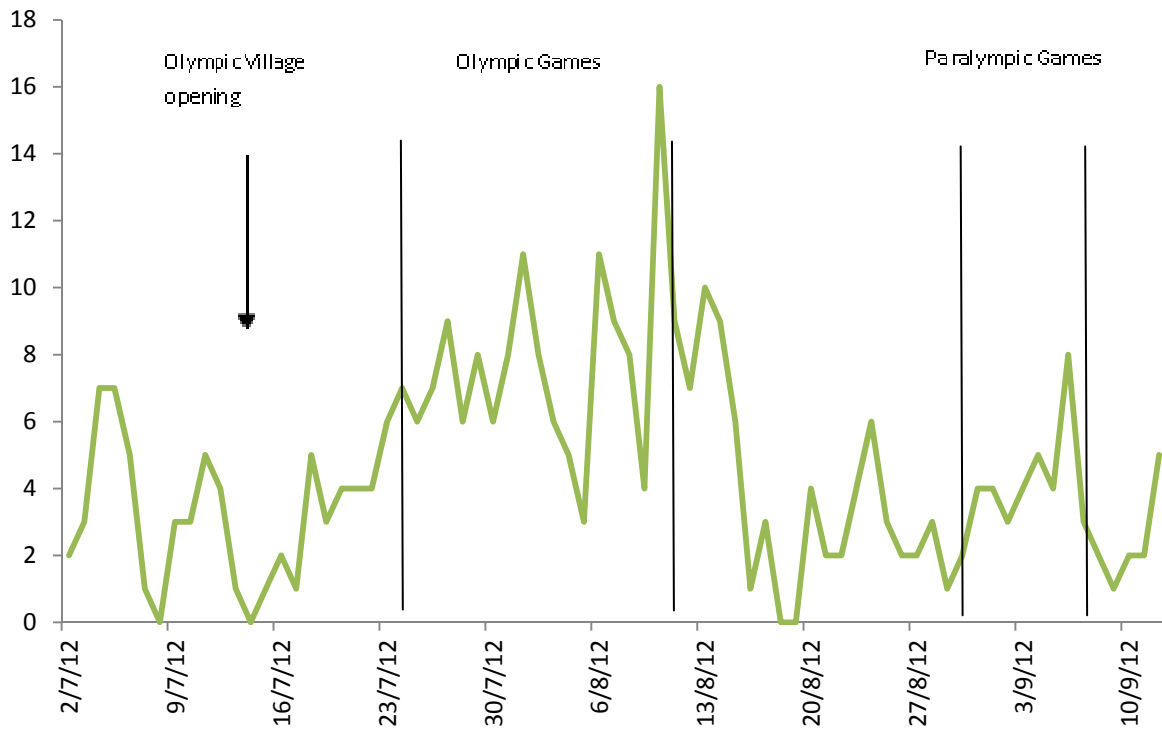
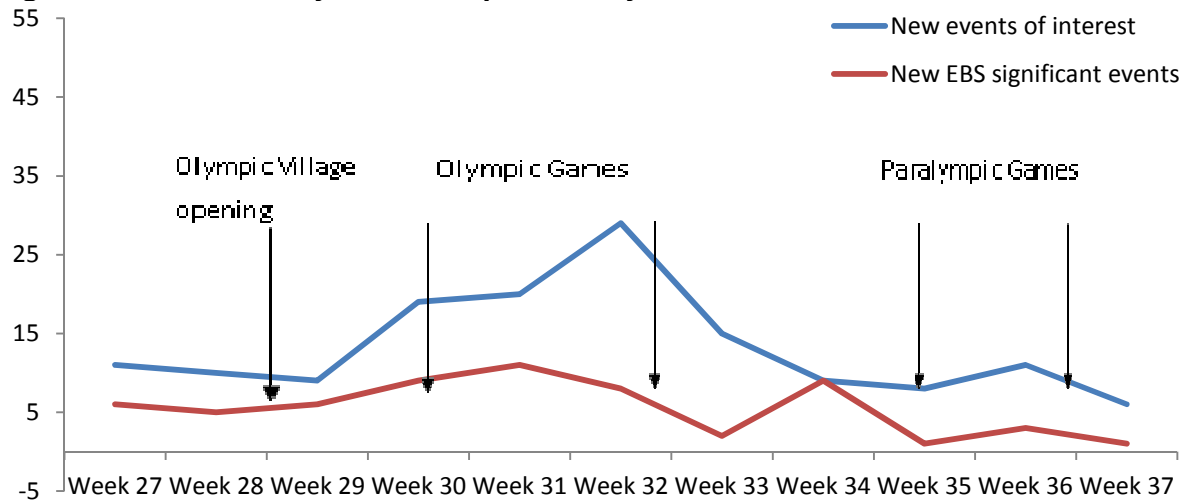


Figure 3: EBS events by week of report and by new or total events, 02/07 - 12/09 2012



Cases

The most commonly reported events were those related to possible food-borne disease/pathogens, followed by events related to vaccine-preventable diseases (VPD) (Table 1).

Graph 1: distribution of new events reported by disease/pathogen, 02/07 - 12/09 2012

Disease/ Pathogen	Events of interest		EBS significant events		OCC significant events	
	N	%	N	%	N	%
Gastroenteritis	39	26.5	15	24.6	8	38.1
E.coli	11	7.5	7	11.5	2	9.5
Salmonella	10	6.8	2	3.3	0	0.0
Campylobacter	8	5.4	1	1.6	1	4.8
Chickenpox	8	5.4	7	11.5	4	19.0
Q Fever	8	5.4	0	0.0	0	0.0
Anthrax	5	3.4	1	1.6	0	0.0
Mumps	5	3.4	1	1.6	0	0.0
Measles	4	2.7	3	4.9	0	0.0
Botulism	3	2.0	3	4.9	0	0.0
Diphtheria	3	2.0	1	1.6	0	0.0
Giardia	3	2.0	2	3.3	0	0.0
Legionnaires' disease	3	2.0	2	3.3	2	9.5
Norovirus	3	2.0	2	3.3	1	4.8
Pertussis	3	2.0	2	3.3	0	0.0
Shigella	3	2.0	0	0.0	0	0.0
Tetanus	3	2.0	0	0.0	0	0.0
Yersinia	3	2.0	0	0.0	0	0.0
Cryptosporidium	2	1.4	0	0.0	0	0.0
Malaria	2	1.4	0	0.0	0	0.0
Meningitis	2	1.4	2	3.3	1	4.8
Pneumonia	2	1.4	1	1.6	0	0.0
Brucellosis	1	0.7	1	1.6	0	0.0
Cholera	1	0.7	0	0.0	0	0.0
Coliform	1	0.7	1	1.6	0	0.0
Fever	1	0.7	1	1.6	0	0.0
Flu	1	0.7	1	1.6	0	0.0
Food poisoning	1	0.7	1	1.6	1	4.8
Hand, foot & mouth disease	1	0.7	0	0.0	0	0.0
Hep C	1	0.7	0	0.0	0	0.0
Hep E (acute)	1	0.7	0	0.0	0	0.0
Parvovirus	1	0.7	1	1.6	1	4.8
Rabies	1	0.7	1	1.6	0	0.0
Sore throat	1	0.7	0	0.0	0	0.0
Swine flu	1	0.7	1	1.6	0	0.0
Polio	1	0.7	1	1.6	0	0.0
Grand total	147	100.0	61	100.0	21	100.0

Significant events reported by the Event Based Surveillance – London 2012 Olympic and Paralympic Games

Source of reports

Overall, 147 new events of interest were identified by EBS (Figure 4). ROCs reported 79 new events, including three new events not identified in DB. The vast majority of the new events of interest were present in DB (144/147 events). Of these, 61 new events had a DB alert sent to the EBS inbox. There were 25 new events both reported by ROC and sent as a DB alert on the same day.

The EBS staff assessed all the events of interest and assessed 61 as meeting the definition of a significant event which were then included in the EBS SitRep. About a third of the events reported in the EBS SitRep were later reported by the OCC SitRep (20/61).

Overall, the OCC included 21 new events in their SitRep under the space related to "Outbreak and incidents". Of these 20 new events had been previously reported in the EBS SitRep. The other new event, a Legionella outbreak in the Midlands, was included in the ROC report but was not included in the EBS SitRep. The OCC received a separate report from Colindale on this outbreak and decided to include the event in their SitRep.

Figure 4: sources of EBS new events and events filtering from EBS to final OCC SitRep

Of the 61 significant new events reported by EBS, 54 (88.6%) were both reported by ROCs and available in DB (Table 2). Of the seven remaining new significant events, five (8.2%) were present only in DB, whilst two (3.2%) were reported exclusively by ROCs.

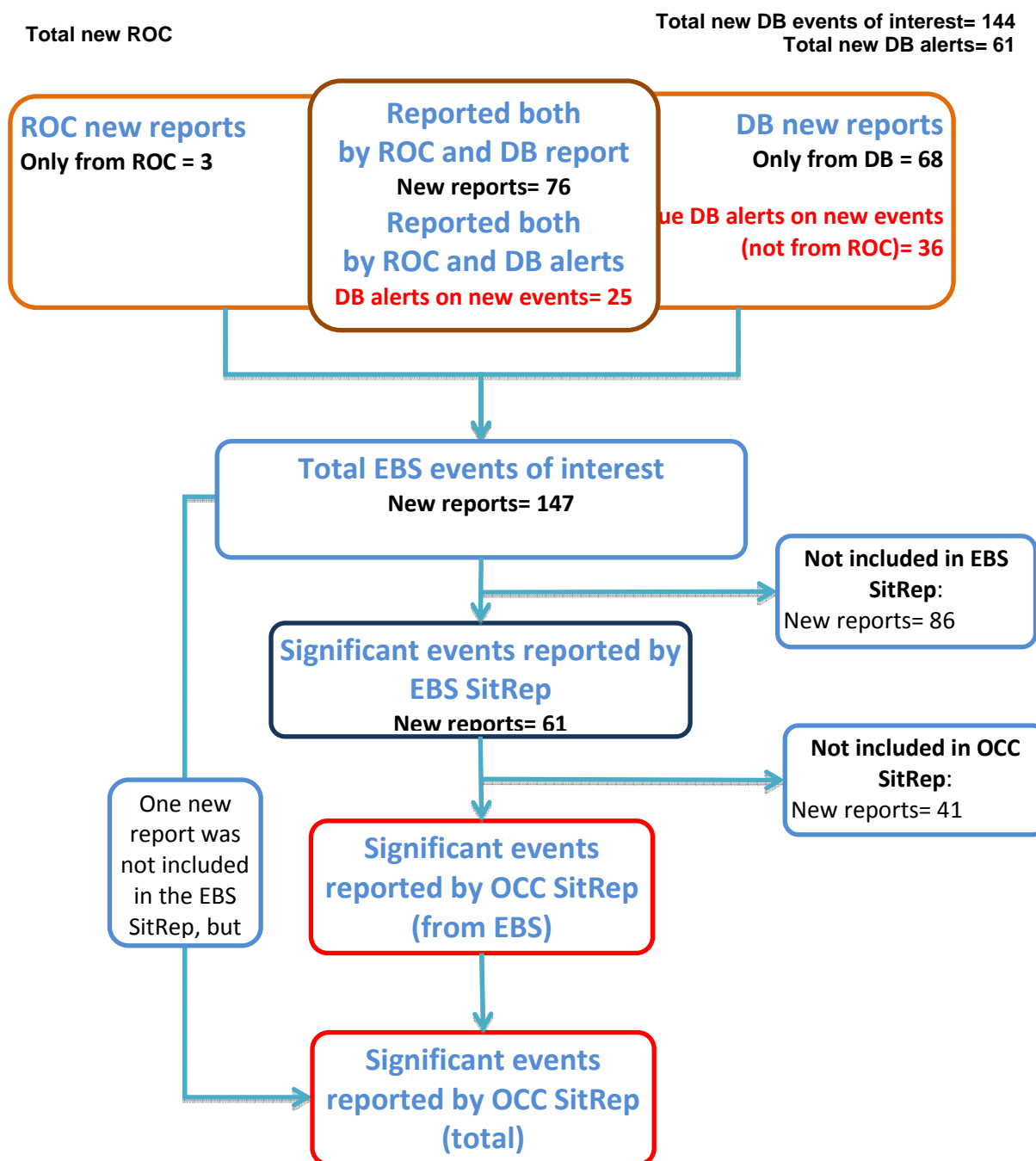


Table 2: sources of new significant events in EBS SitRep by ROC or DB reporting

		DB		Total
		Yes	No	
ROC reports	Yes	54	2	56
	No	5	0	5
Total		59	2	61

Regarding the distribution of the same 61 new significant EBS events, based on ROC reports and DB alerts:

- 38 events (62.3%) were reported only by ROC
- Three events (4.9%) were reported only by DB alerts
- 18 (29.5%) events were reported both by ROC and DB alerts.

The two new significant events reported neither by ROC nor by DB alert were identified by EBS staff through DB screening (Table 3).

Table 3: sources of new significant events in EBS SitRep by ROC reporting or DB alert

		DB alerts		Total
		Yes	No	
ROC reports	Yes	18	38	56
	No	3	2	5
Total		21	40	61

Overall, 21 significant new events were reported in the OCC SitRep. 17 of these (80.1%) were both reported by ROC and entered in DB. Of the remaining four new events, three (14.3%) were entered only in DB, while one (4.8%) was reported only by ROC (Table 4).

Table 4: sources of new significant events in OCC SitRep by ROC or DB reporting

		DB		Total
		Yes	No	
ROC reports	Yes	17	1	18
	No	3	0	3
Total		20	1	21

Finally, of the same 21 new events reported in the OCC SitRep:

- Eight (38.1%) were reported both by ROC and through DB alerts
- 10 (47.6%) were reported only by ROC
- Two (9.5%) were reported only through DB alerts
- Neither ROC nor DB alert reported one event (4.8%), which was identified through DB screening (Table 5).

Table 5: sources of new significant events in OCC SitRep by ROC reporting or DB alert

		DB alerts		Total
		Yes	No	
ROC reports	Yes	8	10	18
	No	2	1	3
Total		10	11	21

Appendices

Table 6: EBS events by HPA reporting region and by new or update reports, 02/07 - 12/09 2012

HPA region	New events		Update events		Total events	
	N	%	N	%	N	%
London	76	51.7	65	35.1	141	42.5
South East	20	13.6	18	9.7	38	11.4
South West	17	11.6	11	5.9	28	8.4
North West	9	6.1	78	42.2	87	26.2
East Midlands	8	5.4	8	4.3	16	4.8
East of England	6	4.1	2	1.1	8	2.4
Yorkshire	6	4.1	1	0.5	7	2.1
West Midlands	4	2.7	2	1.1	6	1.8
North East	1	0.7	0	0.0	1	0.3
Total reports	147	100.0	185	100.0	332	100.0

Table 7: Distribution of new events reported by OCC, EBS, Dashboard alerts and ROC, 02/07 - 12/09 2012

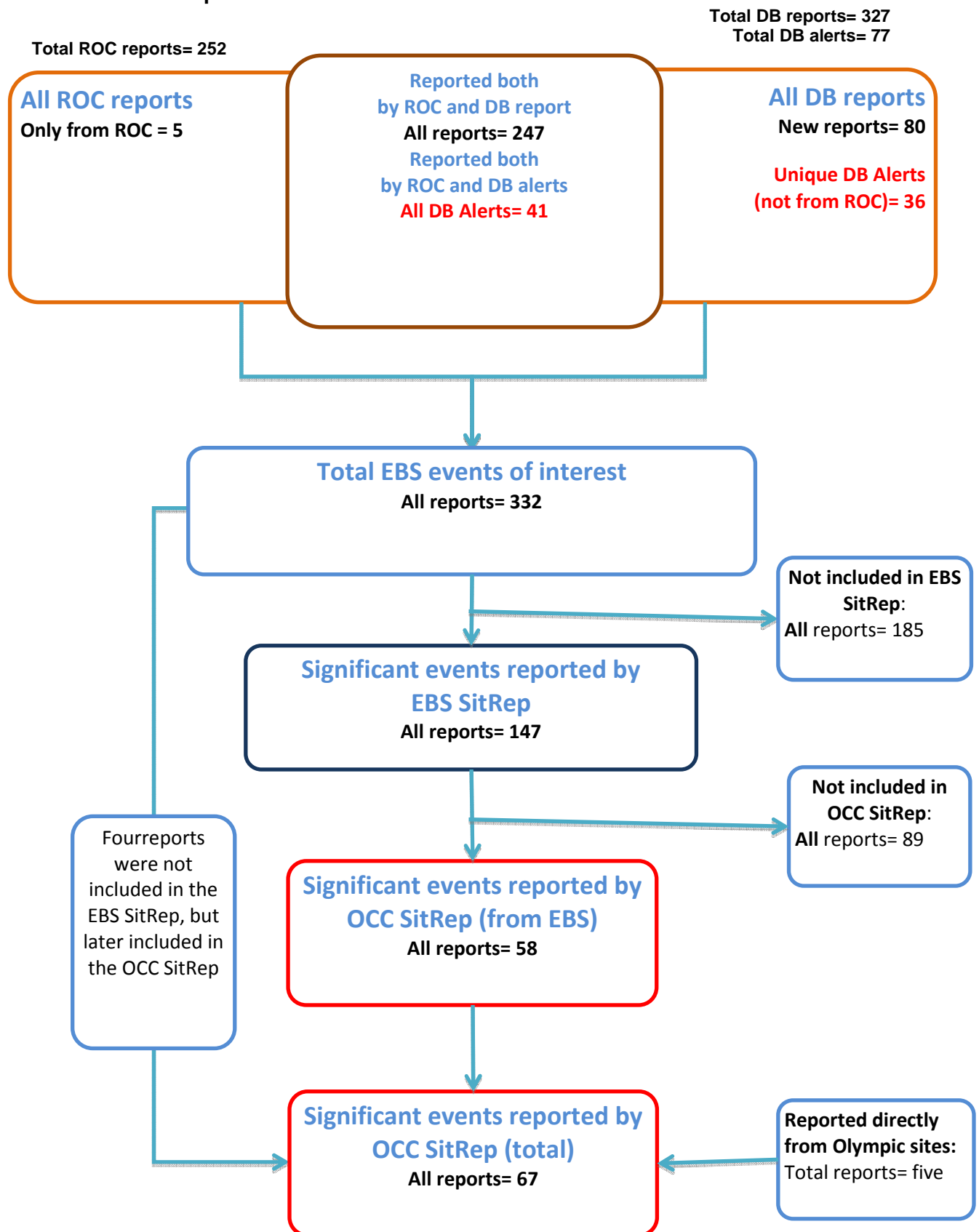
		OCC Yes			OCC No			Grand Total
		EBS Yes	EBS No	Total	EBS Yes	EBS No	Total	
ROC Yes	Total DB alert	17	1	18	39	22	61	79
	Yes DB alert	8	0	8	10	7	17	25
	No DB alert	9	1	10	29	15	44	54
ROC No	Total DB alert	3	0	3	2	63	65	68
	Yes DB alert	2	0	2	1	33	34	36
	No DB alert	1	0	1	1	30	31	32
		20	1	21	41	85	126	147

Table 8: Distribution of all events reported by OCC, EBS, Dashboard alerts and ROC, 02/07 - 12/09 2012

		OCC Yes			OCC No			Grand Total
		EBS Yes	EBS No	Total	EBS Yes	EBS No	Total	
ROC Yes	Total DB alert	54	3	57	85	110	195	252
	Yes DB alert	13	0	13	15	13	28	41
	No DB alert	41	3	44	70	97	167	211
ROC No	Total DB alert	4	6	10	4	66	70	80
	Yes DB alert	2	0	2	1	33	34	36
	No DB alert	2	6	8	3	33	36	44
		58	9	67	89	176	265	332

Significant events reported by the Event Based Surveillance – London 2012 Olympic and Paralympic Games

Figure 5: Sources of all EBS events (new and updates) and event filtering from EBS to the final OCC SitRep



Lessons learnt from Event Based Surveillance

Aim

This document aims to describe the main discussion points and lessons identified from Event Based Surveillance (EBS) run by the HPA for the London 2012 Olympics.

For the EBS protocol, a review of the events reported and a summary of the stakeholder views, please access the following documents.



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Brief description of EBS

EBS activities were conducted on a daily basis for 73 days between 2 July 2012 and 12 September 2012, apart from 7 to 8 July and 18 to 19 August, when national Olympic surveillance activities were on an exception report basis only. EBS was based in HPA Victoria, and was staffed by a team that included a daily duty regional epidemiologist and a scientist or a public health trainee. The EBS protocol describes in detail the relevant definitions, timelines, process, roles and responsibilities.

Every day HPU reported events of interest to their Regional Operation Cell (ROC), who then subsequently reported to EBS. EBS staff also screened the HP Dashboard (DB) for significant events. EBS combined intelligence from both ROC reports and DB screening to identify significant events that were then reported on a daily EBS SitRep to the Olympic Coordination Centre (OCC). The OCC issued a daily public health SitRep to the Department of Health and to LOCOG. At each level information was filtered and risk assessed.

Discussion points

Preparation

The EBS team were part of the overall Surveillance Group that met frequently over the years building up to the Games. This was important in agreeing how related surveillance streams would work together. However, it was apparent that key players were not part of that group and that decisions made in the Surveillance Group were open to challenge later.

Exercises were invaluable. EBS ran three exercises prior to the Games, one in December 2011 and two in April 2012. These focussed minds in ensuring the protocol was fit for purpose, ensuring that Health Protection Units (HPUs) and Regional Epidemiology Units (REUs) were trained and that the EBS team were familiar with procedures. These led to a number of changes in the protocol, including that the EBS SitRep was sent to the Colindale team for review, prior to being finalised.

The amount of training required when establishing a changed surveillance system should not be underestimated. The EBS team held two national teleconferences explaining the EBS protocol with HPU and REU representatives. Despite this, information did not get disseminated to all HPU team members and there was feedback from HPUs that they did not know what the processes were. This led to further training events held with wider HPU team members, which were more successful at reassuring HPU teams.

As HP Dashboard was not ready for use for the first exercise, an alternative email reporting system was developed and this became the backbone of the EBS system. Dashboard came on board too late to be relied upon for the Games as the only EBS system.

EBS team members required a lot of support and detailed supporting materials in order to be comfortable with their new role.

One issue when preparing rotas for EBS was that human resource arrangements for covering staff working at weekends were not resolved in a timely way, and guidance often changed. This hampered managers' ability to provide definitive advice to staff.

Structure

The siting of EBS at HPA Victoria in proximity to the OCC, as opposed to being located with the HPS Colindale National Surveillance team, worked well. This was strongly debated prior to the games and was agreed relatively late. It worked because there was close personal liaison with both LOOC and OCC. There is an argument for siting the EBS team within OCC rather than LOOC as this was a national surveillance system and EBS may have had more authority to ask for more detailed information as part of OCC.

There were different views on whether non-infectious environmental hazards (NIEH) should be captured by EBS. The Surveillance Group decision was that EBS did not cover these. This reflected differences in how national centres are involved in infections and NIEH. All NIEH incidents are generally reported to the Centre for Radiation, Chemical and Environmental Hazards (CRCE), whereas all infectious disease incidents are not. This meant that CRCE were well placed to report. The decision not to cover NIEH then resulted in a late discussion as to whether or not the HPS Colindale National Surveillance team should cover all infectious reporting, including EBS, rather than the London REU. No change was made as a result of this discussion. It should be noted that in the preparation phase there was some confusion at a local level as HPUs were used to reporting NIEH incidents to REUs for weekly reporting.

The team of five Regional Epidemiologists (REs) and seven scientists/trainees was adequate to manage the EBS rota. Feedback was received that a duty RE and an administrator could have covered the role (i.e. a scientist/trainee was not needed). The difficulty for the REs was that they also had to cover their normal acute response with additional surge capacity, which meant that they were on rotas for the vast majority of Games time. Additional surge capacity was therefore requested from other REUs. The surge capacity was not tested during Games time.

Operation

EBS during the Olympic period generally went smoothly, and feedback from stakeholders was positive. This may reflect that the ROC reporting was similar in process to the routine weekly report that they were used to compiling. REUs considered the reporting process to be simple, although some commented that the 1230hrs daily teleconference was not necessary.

EBS was considered to be reliable and responsive, and to have met the needs of the OCC and provided an appropriate level of information. The OCC was reassured that there were no unidentified issues. The OCC judged EBS to be a valuable addition to the Games surveillance system, and that it had completely achieved its objectives.

The period from 2 July was very helpful in testing and embedding the system prior to the more sensitive Games period.

The sharing of the EBS SitRep with the HPS Colindale National Surveillance team prior to finalisation appeared to work, and the HPS Colindale team made helpful comments. There was some duplication in reports from the Colindale MS cell.

Dashboard (DB) was generally useful as a screening tool to ensure that no significant events were missed. The DB alerts were also helpful in providing early warnings of potentially significant events. However, very little information was available on DB and so the ROC reports were ultimately the most useful elements of EBS. It is difficult to visualise DB running alone being an effective EBS system. There were also early teething problems with DB alerts in that HPUs were incorrectly putting information onto HPZone with a principal context as the Games.

ROC reports were generally timely and the daily teleconference helped reassure the EBS team that all events of significance were being captured.

The major issue regarding the ROC reports was the quality of the information, especially the poor quality of the risk assessments. In the EBS protocol, there were examples of good reports and a checklist of information that reports needed to include. This information was frequently missing and resulted in the EBS team having to revise reports substantially to state specifically what the impact of the event was on the Games, and to request further information. Furthermore, the EBS team sometimes encountered hostility from HPUs when requesting additional information. There was a change in the process of risk assessments mid-reporting period to try and improve their quality, with a full risk assessment to be completed for every event reported. A different approach would have been for the OCC to request a full risk assessment on a case-by-case basis only. Embedding EBS in OCC may have resolved some of these issues as it would have been seen to be acting on behalf of OCC. In addition, swift and robust feedback by EBS (with support from OCC) during the early reporting period regarding the quality of reports may have led to quality improvements.

Lessons identified

- EBS was an effective way of meeting the needs of the OCC for timely information on significant events
- Produce early protocols, providing examples of what needs to be reported and importantly, what does not
- Early testing is key. Exercises were particularly helpful in identifying issues and familiarising stakeholders
- Start surveillance early to iron out issues and to familiarise stakeholders with requirements
- Do not underestimate the amount of training needed to implement a change in surveillance systems. Do not rely on stakeholders reading protocols or individuals relaying information to colleagues; training needs to be direct to those undertaking the surveillance
- Surveillance planning groups should include key decision makers so that ratified decisions are not subsequently open to challenge
- Close proximity of EBS to OCC is important
- A system of daily reporting from area teams was broadly effective. However, teams need particular training on the quality of reports, specifically in including statements which reflect the risk that the event poses to the Olympics
- Establish a system for deciding for which events full risk assessments should be conducted
- Provide early and robust feedback when reports of poor quality are received, supported by the OCC
- Dashboard was useful as a screening and alerting tool only
- Human resources need to provide definitive guidance on out of hours reimbursement in a timely way
- Ensure there are good working relationships with other surveillance stream teams and share information routinely to avoid duplication
- Have clarity over who reports events where there may be overlap, including a process for resolution.

Summary of post-Games Event Based Surveillance surveys to stakeholders

Background

Between 15 September and 15 November 2012, the Event Based Surveillance (EBS) Lead sent out three surveys to the main EBS stakeholders: EBS staff; HPA regional epidemiologists (REs); and the directors and manager of the HPA Olympic Coordination Centre (OCC). The surveys aimed to collect feedback about the EBS preparation and activities. The key points of each survey are described below.

EBS staff survey

This was a web-based survey with pre-defined answers and free text comments. Responders were the EBS staff during the Games preparation and the Games activities: EBS Leads (London and South East regional epidemiologist on duty in EBS) and EBS Supports (London and South East scientists and trainees on duty in EBS). Participation was 90%: nine out of ten EBS staff took part in the survey.

EBS staff rated the EBS support material provided (guidelines, protocol, etc.), the support received and the overall clarity on how to perform the job as excellent or good. Comments revealed some perplexity regarding the usefulness of the pre-Olympic exercises and the role of the EBS Support: sometimes this was felt to be a mere administrative role (filing EBS documents), in which case a scientist was not required.

Regarding the usefulness of the EBS systems (i.e. daily teleconference, ROC reports and overall EBS), EBS staff mostly rated these as good, ranging from excellent to fair. The highest variability in replies was related to the usefulness and the simplicity of running HP Dashboard, which varied between excellent and poor.

Some EBS staff reported not experiencing any major difficulties during the EBS Olympic activities, others identified the following as major problems experienced:

- ROCs not following the reporting guidelines
- The purpose of reporting events which were not “really significant”.

EBS staff recommended that the following could have been done differently:

- The EBS Support role could have been dealt with by administrative staff, instead of having a senior scientist dealing with it. A “surge role” for senior scientist could have been more appropriate
- Running HP Dashboard three times a day was felt to be too much
- The risk assessment was considered quite subjective.

Regional epidemiologists survey

This was also a web-based survey with pre-defined answers and free text comments sent to all HPA REs (nine). Participation was 89%: eight out of nine REs. A survey with similar questions was also sent to all HPU Olympic Surveillance Leads (25). Only two participated and the survey was called off.

All REs responding reported that the reporting process of EBS events from HPU to ROCs was simple. About 60% reported the same about defining which events had to be reported to EBS; the remaining 40% rated that as fair.

The overall EBS reporting process, the EBS guidelines and the training material was generally rated as good, ranging from very good to neutral. Regarding the overall reporting process, individual REs commented that the 1230hrs daily teleconference was not necessary and that HPZone and Dashboard were not fit for purpose as an epidemic intelligence tool. One RE commented that the EBS guidance could have been more detailed in describing the events risk assessment process.

The guidance on the use of HPZone and the actual use of HPZone for Games purposes was mostly rated as good and neutral, ranging from very good to poor. Two thirds of the REs rated the EBS level of integration with the other Games surveillance systems as neutral, a third of them as good.

REs were also asked to estimate how much time was dedicated to EBS operations in their unit. London region responded including the time spent for the regional processes and for the national EBS processes (since the national EBS team was hosted by the regional office). The mean overall day activity in the six ROCs responding to this question was 240 minutes during weekdays and 177 minutes during weekends. All different staff roles were collaborating during weekdays; only scientists, trainees and consultants were reported working over weekends. Trainees and consultants were those bearing largest part of the workload both in weekdays (57.9%) and weekends (83.1%).

OCC directors survey

This was a semi-structured interview with both open questions and pre-defined answers sent to all OCC directors and the OCC manager. Participation was 100% with all three OCC directors and the OCC manager participating.

OCC directors identified the following as EBS strengths: EBS was an efficient information management system able to provide a conduit to carry all information from local and regional levels in a single flow to the OCC. This work was done in a fast, reliable and very responsive way, providing confidence to the OCC that indeed nothing was happening if no incidents were reported.

As EBS weaknesses, OCC directors identified: at OCC level, some lack of clarity about the events reported simultaneously by multiple sources (for example about events reported by MS and EBS); at Dashboard level some perplexities about possible human errors in the frequent Dashboard searches and some uncertainty related to events picked up from Dashboard which were not reported by ROC; and at ROC level, some hesitation about the EBS expectations from ROC reporting.

About the things that went well: the reporting from ROCs to EBS to OCC provided a complete daily overview on what was happening allowing to easily inform and respond to stakeholders; also the EBS work was considered very reliable, professional and responsive, driven by a dedicated EBS staff and able to provide confidence. Finally, there was a good communication with ROCs driven by the good level of the supporting material.

Among the things that did not go really well was mentioned that OCC on some occasions received confusing info from EBS. Regarding the surveillance activities, some inconsistencies in the risk assessment approach were noted. It was not completely clear if EBS was a reporting route only or a response route too – with the second not being the case. CRCE events should have been included in the EBS report - however this was a choice prior to the beginning of the Olympics. Finally, it was felt that there was a risk that HPU and ROCs, due to too many Olympic guidelines, could ignore the reporting instruction.

Possible improvements to EBS could have included better communication between EBS and the Olympic venues (information sometimes bypassed EBS and went directly from the Olympic Village to the OCC) and more incisive indications to the Units that in informing EBS, they were actually informing the OCC. Finally, EBS possibly should have had access to the entire HPZone net, to turn around the problem of the small amount of info available on HP Dashboard.

All OCC directors were very satisfied that EBS met the OCC needs and two thirds of them felt completely reassured that there were no unidentified issues (the remaining third felt reassured). One of them added that now we can be sure that no serious events went uncovered as nothing was reported since then (in the two months following the Games).

The possible threats unidentified were that all events not known to HPU or not reported to or by ROC; it is also possible that EBS missed some Olympic connections. However, it was reassuring that EBS used the Dashboard to uncover significant events and that the OCC was also informed by other organisations (e.g. the FSA).

The OCC directors judged EBS as a very valuable or valuable addition to the Olympic surveillance system; they reported that EBS had completely achieved their objectives and that these were correct (should stay the same), although CRCE events should have been included.

Finally, OCC directors stated that they would have organised the EBS reporting process in the same way and with the same daily rhythm; that EBS reported the right number of events, in a timely way; and that EBS staff were very responsive to OCC requests of support.

Discussion

- The material distributed before the Olympics (guidelines and training) was well received and consider to provide good added value by all stakeholders
- Both OCC and EBS staff judged the ROC reporting as very important; however ROC did not always follow the guidelines for reporting, and sometimes did not report significant events (which were anyway picked up on DB). These could have caused by two different issues: (a) HPUs not reporting to ROC; and (b) ROCs becoming overwhelmed with too much Games preparatory material from several different departments. Having one single department (the OCC?) sending out all preparatory material could have controlled the number of documents sent out and avoided possible duplication, overlapping or clashing information
- HP Dashboard could have been more user-friendly for EBS and ROC users (e.g. for screening cases, retrieving minimal information and entering Olympic contexts in HPZone). Maybe the system itself and the guidance on how to use it should have better (and earlier) implemented. However, DB was considered a valuable addition by the OCC, which felt it was a precious safety net to pick significant events not reported by ROC
- OCC directors had great considerations of the daily teleconference; on the other hand some ROCs did not really appreciate its usefulness
- The EBS risk assessment was considered to suffer from subjectivity both at ROC and at EBS level; however it is very hard to provide strict guidelines about risk assessing a wide range of infectious diseases events
- Some EBS Support staff felt they were overqualified for the role, which was mostly administrative. On the other hand, the OCC was grateful to the EBS staff for their competency and their dedication. Placing EBS (in place of the EBS Lead) internally to the OCC could be a way to turn around the EBS complaints

- The simplicity of the EBS reporting flow and the usefulness of the EBS system was very appreciated by all stakeholders
- The daily time dedicated to run EBS at ROC and national EBS level was about four hours during weekdays and slightly more than three hours on weekends. This time was distributed between different staff, with trainees and consultants bearing the largest proportion of this time (weekdays -57.9%; weekends - 83.1%).